

**REMARKS**

Reconsideration and allowance of the subject application are respectfully requested. Claims 1-19 and 21-22 remain pending, claims 8, 13, and 14 having been withdrawn from consideration. Of the claims under consideration, claims 1, 10, 15, and 19 are independent.

**Restriction Requirement**

In reply to the requirement set forth on page 2 of the Office Action, Applicants hereby affirm election of the Group I invention, including claims 1-7, 9-12, and 15-22, drawn to a method of making a wear resistant shoe. Applicants respectfully reserve the right to file a divisional application(s) for the non-elected claims.

**Prior Art Rejections**

1. **§ 102 Rejection: *Rateick***

Claims 19-22 stand rejected under 35 U.S.C. § 102(b) as allegedly being clearly anticipated by *Rateick, Jr.* (U.S. Patent 5,728,475, hereinafter "the *Rateick* '475 patent"). This rejection, insofar as it may pertain to the presently pending claims, is respectfully traversed.

Independent claim 19 is directed to a method of forming and assembling a piston and wear resistant shoe from hardened rod stock. The method of claim 19, as amended herein, comprises: machining a region of the hardened rod stock to form a cam engaging wear resistant surface of the wear resistant shoe; forming a hollow region in one rod stock end portion; annealing the one end portion of the rod stock; and crimping the periphery of the hollow region about a rounded end of the piston rod.

As described in the Background section of the present application, the *Rateick* '475 patent describes a technique for manufacturing a piston shoe 10 having a skirt/flange area 16 formed to the shape of a piston head 18, a wear surface 12 and back flange 14, which engage and wear on a cam plate 22 and auxiliary cam plate 24, respectively. In contrast to the method of claim 19, however, the technique disclosed in the *Rateick* '475 patent is not specific to forming and assembling a piston and wear resistant shoe using hardened rod stock as the starting material for forming the shoe. Thus, with reference to amended claim 19, the *Rateick* '475 patent does not machine a region of hardened rod stock to form a cam engaging wear resistant surface of the wear resistant shoe.

According to MPEP §2131, "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. Of California*, 814 F.2d 628, 631, 2 USPQ2d 1051 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ...claims." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913 (Fed. Cir. 1989).

Applicants respectfully submit that the Office Action has failed to establish the required *prima facie* case of anticipation because the cited reference, the *Rateick* '475 patent, fails to teach or suggest each and every feature as set forth in the claimed invention.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the Examiner's rejection under 35 U.S.C. § 102.

2. § 103 Rejection: "Cold Heading" - *Rateick*

Claims 1-6, 9-12, and 15-18 stand rejected under 35 U.S.C. § 103 as being unpatentable over cited portions of Metal Handbook, 9<sup>th</sup> ed. ("Cold Heading") in view of the *Rateick* '475 patent. This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

Independent claim 1 is directed to a method of manufacturing a wear resistant shoe. The method of claim 1, as amended, comprises: cold-heading one end portion of a generally cylindrical blank to radially increase and axially diminish the dimensions of the one end portion, and to work harden the one end portion while leaving an opposite end portion dimensionally unchanged; machining the previously cold-headed one end portion to form a cam engaging portion of the wear resistant shoe; and subsequently cold-working and thereby hardening the opposite end portion.

Thus, as emphasized by the amendments made herein, claim 1 is specifically directed to the manufacture of a wear resistant shoe and requires the use of a combination of cold-heading for upsetting and work hardening one end of a generally cylindrical blank and machining to form a cam engaging portion of the shoe. As described for example on page 3 of the present application, Applicants have found that this claim technique provides certain advantages as compared to that described in the *Rateick* '475 patent in terms of wear resistance and ease of manufacture.

The primary reference, "Cold Heading," describes materials, equipment characteristics, etc. of cold heading as a forging process. Although "Cold Heading" describes using this type of forging process for manufacture of items such as bolts and

rivets, there is no description of using cold heading in the manufacture of the cam engaging portion of a wear resistant shoe, as now clearly required by claim 1.

Furthermore, as clearly evident from the above description, the *Rateick* '475 patent fails to make up for this deficiency of the primary reference because the *Rateick* '475 patent neither discloses nor suggests using cold heading for forming such a cam engaging portion.

To establish *prima facie* obviousness, all claim limitations must be taught or suggested by the prior art and the asserted modification or combination of prior art must be supported by some teaching, suggestion, or motivation in the applied reference or in knowledge generally available to one skilled in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). Thus, "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). The prior art must suggest the desirability of the modification in order to establish a *prima facie* case of obviousness. *In re Brouwer*, 77 F.3d 422, 425, 37 USPQ2d 1663, 1666 (Fed. Cir. 1995). It can also be said that the prior art must collectively suggest or point to the claimed invention to support a finding of obviousness. *In re Hedges*, 783 F.2d 1038, 1041, 228 USPQ 685, 687 (Fed. Cir. 1986); *In re Ehrreich*, 590 F.2d 902, 908-09, 200 USPQ 504, 510 (CCPA 1979).

Accordingly, Applicants respectfully submit that the asserted manufacturing technique of "Cold Heading" in view of the *Rateick* '475 patent (assuming these teachings

are combinable, which Applicants do not admit) fails to establish *prima facie* obviousness of independent claim 1 or any claim depending therefrom.

Applicants respectfully submit that independent claims 10 and 15, as well as all claims depending therefrom, distinguish over the asserted combination at least based on similar reasoning to that set forth above with regard to claim 1.

With specific reference to dependent claim 9, the Examiner states on page 6 of the Office Action that:

Nickel and cobalt alloys are well known to be similar in properties, even so much that many Ni- or Co-based alloys mention that the base of the material can be either Ni or Co or a combination of the two. Therefore, one of ordinary skill in the art would have has [sic] a reasonable expectation of successfully applying cold heading to a cobalt alloy.

Applicants respectfully disagree and note that most cobalt alloys are brittle at room temperature and do not in most cases have the same properties as nickel alloys. If this rejection is maintained, Applicants respectfully request that the Examiner provide some basis for the assertion that cobalt alloy is generally known to be a suitable material for cold heading.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the Examiner's rejection under 35 U.S.C. § 103 based on the asserted combination of "Cold Heading" and the *Rateick* '475 patent.

3. "Cold Heading" - Rateick - Harada

Claim 7 stands rejected under 35 U.S.C. § 103 as being unpatentable over the cold heading disclosure in view of the *Rateick* '475 patent, and further in view of *Harada* (JP 56-

084468). This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

As stated on page 8 of the Office Action, the Examiner relies on *Harada* as allegedly teaching incremental features of dependent claim 7. Applicants note, however, that the Examiner's reliance on *Harada* fails to make up for the deficiencies of the asserted modification of "Cold Heading" in view of the *Rateick* '475 patent discussed above. Accordingly, the asserted modification of "Cold Heading" in view of the *Rateick* '475 patent and *Harada* (assuming these references are combinable, which Applicants do not admit) fails to establish *prima facie* obviousness of claim 7, which indirectly depends from claim 1.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the Examiner's rejection under 35 U.S.C. § 103 based on the asserted modification of "Cold Heading" in view of the *Rateick* '475 patent and *Harada*.

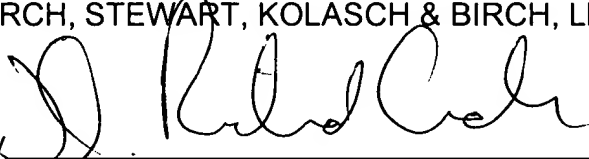
### **CONCLUSION**

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By   
D. Richard Anderson, #40,439

DRA/jdm  
2929-0184P

P.O. Box 747  
Falls Church, VA 22040-0747  
(703) 205-8000

Attachment: Version With Markings to Show Change Made

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

Claim 20 has been cancelled without prejudice or disclaimer of the subject matter contained therein.

The claims have been amended as follows:

1. (Amended) A method of manufacturing a wear resistant shoe, comprising:  
cold-heading one end portion of a generally cylindrical blank to radially increase and axially diminish the dimensions of the one end portion, and to work harden the one end portion while leaving an opposite end portion dimensionally unchanged;  
machining the previously cold-headed one end portion to form a cam engaging portion of said wear resistant shoe; and  
subsequently cold-working and thereby hardening the opposite end portion.

4. (Amended) The method of claim 3, [further including] wherein the step of machining the one end portion machines the one end portion to predetermined final dimensions subsequent to the step of cold-heading and prior to the step of crimping.

5. (Amended) The method of claim 3, [further including] wherein the step of machining the cold-headed end portion [to form] forms a cam engaging wear resistant surface.

10. (Amended) A method of manufacturing a wear resistant shoe, comprising:



work hardening a portion of a cylindrical member to a substantial depth;  
machining the work-hardened cylindrical member portion to finished dimensions,  
thereby forming a cam engaging portion of said wear resistant shoe; and  
surface hardening a face of the machined cylindrical member portion.

15. (Amended) A method of forming and assembling a piston and wear resistant shoe, the shoe formed from rod stock of a diameter less than the greatest diameter of the finished shoe, comprising:

upsetting one end portion of the rod stock to axially reduce and radially increase the dimensions of the one end portion[:];

machining the previously upset one end portion to form a cam engaging portion of said wear resistant shoe;

forming a hollow region in an opposite rod stock end portion; and

crimping the periphery of the hollow region about a rounded end of the piston rod.

19. (Amended) A method of forming and assembling a piston and wear resistant shoe, the shoe formed from hardened rod stock, comprising:

machining a region of the hardened rod stock to form a cam engaging wear resistant surface of the wear resistant shoe;

forming a hollow region in one rod stock end portion;

annealing the one end portion of the rod stock; and

crimping the periphery of the hollow region about a rounded end of the piston rod.

21. (Amended) The method of claim 19 [20], further including the step of surface hardening the machined cam engaging surface.